

# NOMENCLATURAL NOVELTIES IN *NUPHAR* (NYMPHAEACEAE)

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## ABSTRACT

Recent revisionary and cladistic studies in *Nuphar* Sm. resulted in the following nomenclatural amendments: two novel sections are described (sect. *Nuphar* and sect. *Astylus*), five new combinations are proposed (*N. advena* subsp. *orbiculata*, *N. advena* subsp. *ozarkana*, *N. advena* subsp. *ulvacea*, *N. pumila* subsp. *sinensis*, *N. pumila* subsp. *oguraensis*), and one species, *N. oguraensis* Miki, is lectotypified.

## RESUMEN

Los estudios recientes, cladísticos y revisiones de *Nuphar* Sm. dan por resultado las siguientes enmiendas nomenclaturales: se describen dos secciones nuevas (sect. *Nuphar* y sect. *Astylus*), se proponen cinco combinaciones nuevas (*N. advena* subsp. *orbiculata*, *N. advena* subsp. *ozarkana*, *N. advena* subsp. *ulvacea*, *N. pumila* subsp. *sinensis*, *N. pumila* subsp. *oguraensis*), y se lectotipifica *N. oguraensis*.

*Nuphar* Sm. (Nymphaeaceae) is a relatively common genus in north temperate regions of North America, Europe and Asia. Inhabiting ponds, lakes, streams and slow moving rivers, these perennial herbs are characterized by floating and submersed leaves and solitary, globose, yellow flowers.

While conducting monographic research on *Nuphar*, morphological analyses initially suggested that the genus was represented by two sets of species, Old World and New World segregates (Padgett et al. 1996). Cladistic analyses of representative internal transcribed spacer (ITS) sequences (nrDNA) and *matK* (cpDNA) sequences subsequently offered strong support for the same two infrageneric lineages (Padgett 1997; Padgett et al., in press). Accordingly, the classification of *Nuphar* is emended to include two sections.

*Nuphar* sect. *Nuphar* is characterized by five sepals, anthers no more than half the length of the filaments, and urceolate fruits with elongated necks, or "styles" of some authors. It contains all Eurasian species with a single species (*N. microphylla* (Pers.) Fern.) represented in northeastern North America. *Nuphar* sect. *Astylus* is characterized by 6–12 sepals, anthers 1–2 times the

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length of the filaments, and ovoid fruits lacking apparent necks. It is entirely North American in distribution.

**Nuphar** sect. **Nuphar**. TYPE: *Nuphar lutea* (L.) Sm. in Sibth. & Sm., Fl. Graec. Prodr. 1:361. 1808 (1809).

**Nuphar** sect. **Astylus** D. Padgett, sect. nov. TYPE: *Nymphaea advena* Ait., Hort. kew. 2:226. 1789. *Nuphar advena* (Ait.) Ait. f., Hort. kew. ed. 2, 3:295. 1811.

Sepala 6–12; antherae elongatae, filamentis suo duplo usque longiores; fructus ovoideus, haud infra discum constrictus; discus stigmaticus integer (rarius crenatus).

Sepals 6–12; anthers long, 1–2 times the length of the filaments, fruit barrel-shaped without a prominent neck, stigmatic disk entire (rarely crenate). North America. TYPE SPECIES: *Nuphar advena* (Ait.) Ait. f.

The synonymy of *Nuphar* is extensive and only recently has been assessed from a world-wide perspective (Beal 1956; Padgett 1997). However, since the primary purpose of this article is to make these new names available, complete synonymy will be withheld for a later publication (or see Padgett 1997). It should be noted, however, that Beal (1955; 1956) greatly broadened the species concept in his revision of *Nuphar*, thus placing into synonymy many previously recognized species under the type species *N. lutea* (L.) Sm. While information gleaned from the recent phylogenetic studies of the genus precludes any attempt to treat North American entities at a subspecific level under *N. lutea* (as urged by Beal [1956]), an alternative classification does adopt infraspecific taxa for some species (Padgett 1997). These taxa, as subspecies, are based on groups of populations with distinctive characters which exhibit geographical, and in some cases ecological, integrity but otherwise fall within the range of morphological variability for the species. A more detailed account of studies that support the taxonomic decisions reflected here will be forthcoming elsewhere (or see Padgett 1997).

As recognized by Padgett (1997), *Nuphar advena* sensu lato is a polymorphic species in section *Astylus* that ranges throughout most of southeastern North America. It is comprised of four recognizable, but morphologically strongly overlapping and inter-grading subspecies.

The reduction in rank of the three taxa that follow is based on examination of numerous herbarium specimens of this species complex from throughout its range, coupled with fieldwork, as well as multivariate statistical analyses (Padgett, in prep.). Infraspecific ranking of most of these formerly recognized species has been supported in opinion by other workers (e.g., Yatskievych & Turner 1990; Wiersema & Hellquist 1997).

**Nuphar advena** (Ait.) Ait. f. subsp. **orbiculata** (Small) D. Padgett, comb. nov. BASIONYM: *Nymphaea orbiculata* Small, Bull. Torrey Bot. Club 23:128. 1896. *Nuphar orbiculatum* (Small) Standl., Field Mus. Nat. Hist. Bot. Ser. 8:310–11. 1931. *Nuphar lutea* (L.) Sm. subsp. *orbiculata* (Small) E.O. Beal. J. Elisha Mitchell Sci. Soc.

72:338. 1956. "*orbiculatum*" TYPE: U.S.A. GEORGIA. THOMAS CO.: along or near the Ochlockonee River near Thomasville, *Small s.n.* (LECTOTYPE designated by Miller & Standley (1912): NY; ISOLECTOTYPES: F not seen, NY).

***Nuphar advena* (Ait.) Ait. f. subsp. *ulvacea* (Mill. & Standl.) D. Padgett, comb. nov.** BASIONYM: *Nymphaea ulvacea* Mill. & Standl., Contr. U.S. Natl. Herb. 16:97. 1912. *Nuphar ulvaceum* (Mill. & Standl.) Standl., Field Mus. Nat. Hist. Bot. Ser. 8:310–11. 1931. *Nuphar lutea* (L.) Smith subsp. *ulvacea* (Mill. & Standl.) E.O. Beal, J. Elisha Mitchell Sci. Soc. 72:336. 1956. "*ulvaceum*". TYPE: U.S.A. FLORIDA: Blackwater River near Milton, *Curtiss 6409* (HOLOTYPE: US, not seen; ISOTYPES: BKL, CONN, F, GH, ILL not seen, MO, NY, UC, US, VT).

***Nuphar advena* (Ait.) Ait. f. subsp. *ozarkana* (Mill. & Standl.) D. Padgett, comb. nov.** BASIONYM: *Nymphaea ozarkana* Mill. & Standl., Contr. U.S. Natl. Herb. 16:91–92. 1912. *Nuphar ozarkanum* (Mill. & Standl.) Standl., Field Mus. Nat. Hist. Bot. Ser. 8:310–311. 1931. *Nymphozantibus ozarkanus* (Mill. & Standl.) Palmer & Steyermark, Ann. Missouri Bot. Gard. 22:538. 1935. *Nuphar lutea* subsp. *ozarkana* (Mill. & Standl.) E.O. Beal, J. Elisha Mitchell Sci. Soc. 72:337. 1956. "*ozarkanum*". TYPE: U.S.A. MISSOURI: Along the White River in southern Missouri, *Smith s.n.* (HOLOTYPE: US).

As recognized by Padgett (1997), *Nuphar pumila* sensu lato is a polymorphic species within section *Nuphar*, largely of northern Eurasia, with three discernible subspecies. This subspecies and the following are restricted to warm regions in eastern Asia. *Nuphar pumila*, distinct from the American *N. microphylla* (Padgett 1998), is perhaps the most widely distributed species in the genus as a whole.

***Nuphar pumila* (Timm) DC subsp. *oguraensis* (Miki) D. Padgett, comb. et stat. nov.** BASIONYM: *Nuphar oguraensis* Miki, Bot. Mag. (Tokyo) 48:334–335. 1934. TYPE: Fig. 7, p. 334 (LECTOTYPE, designated here).

This subspecies refers to a group of relatively rare plants confined to southern Japan. In the original protologue by Miki (1934) no type was designated. Although an effort was made to locate original material (four specimens cited by Miki), specimens of Miki's collections could not be located in Osaka (OSA). Therefore, the illustration in the original description (Miki 1934; Fig. 7, p. 334) of the taxon has been selected to serve as the lectotype. This plate clearly shows the diagnostic central lacuna of the petiole, a feature scarcely apparent on herbarium specimens.

***Nuphar pumila* subsp. *sinensis* (Hand.-Mazz.) D. Padgett, comb. et stat. nov.** BASIONYM: *Nuphar sinense* Hand.-Mazz., Anz. Akad. Wiss. Wien, Math.-Naturwiss. Kl. 63:8. 1926. TYPE: CHINA. HUNAN: Tschangschu, in lacunis reg. subtropicae versus montem Gu-schan, s. arenaceo, *Handel-Mazzetti 11357* (TYPE: not located, possibly at WU).

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